

Effectiveness of Music Therapy on level of Anxiety among Patients Weaned from Mechanical Ventilator in Selected Hospital at Meerut

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Abstract: *Background of the study:* Critically ill mechanically ventilated patients receive intravenous sedative and analgesic medications to reduce anxiety and promote comfort and ventilator synchrony, These potent medications are often administered at high doses for prolonged periods and are associated with various adverse effects. *Aim:* The main aim of the study was to evaluate the effectiveness of music therapy on level of anxiety among patients weaned from mechanical ventilator in selected hospital at Meerut. *Methodology:* Evaluative study was conducted using Quasi Experimental research design (Time series With Multiple institution of intervention with control group) in Selected Hospital at Meerut; conceptual framework utilized for study was General system theory. Total 40 samples (20 experimental group+ 20 control group) were selected. Before conducting the study written consent were obtained from samples. Demographic data was collected from the samples. Pretest was obtained from the samples by using Modified Hamilton Anxiety Scale, then after 1 hour Music was administered for 20 min and after 4 hour interval again same procedure was repeated. Music was given 2 times in a day for the 3 consecutive days. *Results:* On day 1, 2 & 3 Mean Pretest score on level of anxiety among exp group was 43.6, 40 and 37.8. & control group was 43.6, 41.60. & 39.8. This finding reveals mild changes in level of anxiety among both group. On day 1, 2 & 3 Mean Posttest score on level of anxiety among exp group was 34.5, 30.4 & 24.40. & In control group was 43.1, 41.15. & 40.35. This shows that level of anxiety gradually reduces with each day among experimental group. Result shows that when comparing the experimental and control group, Anxiety level has been reduced in experimental group not in control group. So Music is highly significant in reducing anxiety. *Conclusion:* This study concludes that music therapy was definitely effective in reducing level of anxiety among patients weaned from mechanical ventilator.

Keywords: Effectiveness, Music therapy, level of anxiety, patients weaned from mechanical ventilator

1. Introduction

Ventilator support is the life saving treatment for the respiratory failure. Although ventilator support saves the lives, it can also cause many negative psychological & physiological impact on patients. such physiological impacts include- breathlessness, sleeplessness, immobility, restlessness, inability to talk & need for frequent suctioning. anxiety is the most common psychological impact that ventilator support has on patients. anxiety increase the sympathetic nervous system stimulation, breathing difficulty, oxygen demand, myocardial stimulation, all of which contribute to high level of anxiety patients using mechanical ventilator support system often experience adverse events due to this anxiety, such as constriction of the artery & airway in the lungs.

Anxiety is the emotional state involving subjective feeling of tension, aphrasion, nervousness & worry. The physical manifestation of anxiety in patients with ventilator support involve extreme shift in body temperature, urinary urgency, dry mouth, dilated pupils, loss of appetite, and diaphoresis. ventilator support can cause negative psychological response including fear of unknown, and of dying sleeplessness, pain, immobility, loneliness and powerlessness many patients have difficulty in matching their own breathing pattern with ventilator, and they are apprehensive during Endotracheal suctioning In order to reduce the anxiety clinician usually prescribe certain medications but these are not necessarily innocuous. Use of such pharmacological agents may result in development of paradoxical worsening of patient's

confusion & agitation, as well as muscular weakness, which can delay ventilator weaning.

The usual treatment for reducing anxiety and distress that arise from mechanical ventilatory support is the administration of intravenous sedative agents. While these medications are indicated at times to reduce stress, promote breathing comfort and synchrony with the mechanical ventilator, they have numerous side effects, which can delay weaning and prolong ventilator support. There is a need to implement adjunctive, non-pharmacologic interventions that can reduce anxiety in this patient population such as relaxing music. so researcher felt need to do intervention like music therapy to reduce the level of anxiety among the patients weaned from mechanical ventilator

2. Literature Survey

Nicole Gallo-Payet et al (2013) Music and biological stress dampening in mechanically-ventilated patients at the intensive care unit ward—a prospective interventional randomized crossover trial A randomized crossover study was performed in a 16-bed, adult critical care unit at a tertiary care hospital. Still-sedated patients, mandating at least 3 more days of mechanical ventilation, were included. The intervention consisted in two 1-hour daily periods of music-vs-sham-MP3 listening which were performed on Day 1 or 3 post-inclusion, with a Day 2 wash-out. “Before-after” collection of vital signs, recording of daily sedative drug consumption and measurement of stress and inflammatory blood markers were performed. Of 55

randomized patients, 49 were included in the final analyses. Along with music listening, (i) vital signs did not consistently change, whereas narcotic consumption tended to decrease to a similar sedation ($P = .06$ vs sham-MP3); (ii) cortisol and prolactin blood concentrations decreased, whereas Adreno Cortico Trophic Hormone (ACTH)/cortisol ratio increased ($P = .02$; $P = .038$; and $P = .015$ vs sham-MP3, respectively), (iii) cortisol responders exhibited reversed associated changes in blood methionine (MET)-enkephalin content ($P = .01$)

Sanjuán Naváis M et al (2013 Apr-Jun) conducted a research study on Effect of music on anxiety and pain in patients with mechanical ventilator. The sample consist of 44 participants. Intervention consisted in a 30-minute musical session in which the subject used a headset and was in an individual room. For the control group, the usual setting of an intensive care unit was maintained unchanged. Anxiety and pain and hemodynamic variables of heart rate, respiratory rate systolic and diastolic blood pressure were measured at baseline, after the music session and then one-hour later. Result shows that significantly decreased anxiety score ($P=.000$) when measured with the State-Trait Anxiety Inventory (STAI) scale

Linda Chlan et al(2012) conducted a research study on Patterns of Anxiety in Critically ill Patients Receiving Mechanical Ventilatory Support. Sample consisted 57 mechanically ventilator patients who were randomly assigned to the usual care group of a randomized controlled trial designed to assess the efficacy of music interventions on anxiety of mechanically ventilated patients in ICUs. Anxiety ratings were obtained at study entry and daily for up to 30 days. A 100-mm Visual Analog Scale-Anxiety (VAS-A) was used to measure anxiety. VAS-A scores were plotted as a function of study time in days for each participant to discern possible patterns of change. A mixed models analysis was performed to assess the nature and magnitude of change over time (slope) using 251 observations on 57 patients. Results of the unconditional means model indicated further modelling was appropriate. An autoregressive covariance structure with a random component for participant (AR + RE) was chosen as the most appropriate covariance structure for modeling. An unconditional growth model indicated that VAS-A declined slowly over time, -0.53 points per day ($p = .09$).

Davis T et al (2012) conducted a research study on Music therapy: decreasing anxiety in the ventilated patient: a review of the literature. The intensive care unit of a university hospital in Hong Kong was used as the setting for this study. Sample consist of Twenty patients who were ventilator-dependent recruited for the study. They were all Chinese with a mean age of 58.25 years (range, 19-84 y). Most (75%) were men. Physiologic measures of anxiety assessed in this study were mean blood pressure and respiratory rate. An additional measure was the Chinese version of the Spielberger State-Trait Anxiety Inventory. Patients were randomized to receive either 30 minutes of uninterrupted rest and then 30 minutes of music therapy or the music therapy first and then the uninterrupted rest period. Patients listened to relaxing music by using audiocassette players and headphones. Subjects selected the

music of their choice from a selection including both Chinese and Western music. Subjects had physiologic measures taken immediately before the intervention (or rest period) and at 5-minute intervals throughout the intervention. Result shows that music therapy was more effective in decreasing state anxiety than was an uninterrupted rest period ($P < .01$). As measured by analysis of variance with repeated measures, blood pressure and respiratory rate showed no significant differences in the 2 conditions over time. However, significant differences were observed at the end of the intervention (after 30 minutes) between the 2 conditions, with music therapy being superior to the rest period

3. Statement of the Problem

“A study to assess the effectiveness of music therapy on level of anxiety among patients weaned from mechanical ventilator in selected hospital at Meerut”

Objective

- To assess the pre-test level of anxiety among patients weaned from mechanical ventilator.
- To evaluate the effectiveness of music therapy on level of anxiety among experimental group
- To compare the effectiveness of music therapy on level of anxiety among experimental & control group.
- To find out the association between post-test level of anxiety among experimental group with their selected demographic variable.

Hypothesis:

H1: There will be significant differences in post test level of anxiety among patients weaned from mechanical ventilator among experimental and control group.

H2: There will be a significant association between post test level of anxiety among the patients weaned from mechanical ventilator with selected demographic variable in experimental group.

Assumptions

- There will be anxiety in patients with Mechanical ventilator support or who are weaned from mechanical ventilator.
- Music therapy will reduce the anxiety level among the Patients Weaned From mechanical ventilator.
- Music therapy will reduce the discomfort among the Patients Weaned From mechanical ventilator

Conceptual Framework

The conceptual framework of the present study is based on General Systems Theory with input, process, output and feedback. This model was first introduced by Ludwig Von Bertalanffy and Later modified by J.W Kenny (1999)

Operational Definition

- 1) Assess- It refers to quality level of anxiety after Music therapy.
- 2) Effectiveness- It refers to change produce by an action. In this study it refers to reduction in anxiety in patients

weaned from mechanical ventilator as a result of Music therapy.

- 3) Music therapy- Music therapy is the controlled use of music to influence human being, to aid in physiologic, psychologic, and emotional integration of the individual during treatment of an illness or disability. In this study Pleasant, soothing instrumental Music by Pt. Hariprasad Chaurasia will be provided in order to reduce the anxiety level among patients weaned from mechanical ventilator.
- 4) Level of anxiety- it is defined as state of feeling of fear, worry, and uneasiness, usually generalized and unfocused as an overreaction to a situation. In this present study anxiety is the fear, worriness, due to the mechanical ventilator or about his or her situation or condition.
- 5) Weaned from mechanical ventilator-patients who are gradually withdrawn from the ventilator support.
- 6) Intensive care unit(ICUs)- In this study it is a critical care unit where care is given to the critical ill patients

4. Methodology

- **Research Approach:** Evaluative approach was used to carry out the study.
- **Research Design:** Quasi-Experimental Design (Time Series Design with multiple institution of intervention with control group.
- **Setting:** The present study was conducted in ICUs in selected hospital at Meerut. The pilot study was conducted in Hope Hospital at Meerut and main study was conducted in CSSH hospital and Metro Hospital at Meerut

Variables:

- **Independent variable:** In this study, the independent variable is the Music therapy which is given twice a day for three consecutive days for 20 minutes each times.
- **Dependent variable:** Anxiety level of Patients weaned from mechanical ventilator is the dependent variable.

Extraneous variable

Any uncontrolled variable that greatly influences the result of the study is called as extraneous variable. The extraneous variable under study are Age, Gender, Education status, Type of family, Income of family, Duration on ventilator.

5. Results and Discussion

Table 1: Distribution of subjects according to demographic characteristics of the subjects by frequency and percentage
 N= 40(20 exp+20 control)

S. no	Demographic Variables	Experimental		Control	
		Frequency	Percentage	Frequency	Percentage
1	Age (yrs)				
	18-22	1	5%	1	5%
	23-27	2	10%	00	00%
	28-32	3	15%	5	25%
	Above 33	14	70%	14	70%
2	Gender				
	Male	13	65%	11	55%
	Female	7	35%	9	45%
3	Educational status				
	No formal	7	35%	6	30%

	education	1	5%	00	00%
	Primary school	5	25%	6	30%
	Secondary school	7	35%	8	40%
	Any other				
4	Type of Family				
	Nuclear family	6	30%	5	25%
	Joint family	14	70%	13	65%
	Extended family	00	00%	2	10%
5	Income of the family				
	Below 5000	00	00%	00	00%
	5001-10000	2	10%	1	5%
	10001-15000	11	55%	12	60%
	Above 15000	7	35%	7	35%
6	Duration on ventilator				
	0-5 days	15	75%	16	80%
	5-10 days	3	15%	4	20%
	10-15 days	2	10%	00	00%
	15-20 days	00	00%	00	00%

Table shows that 70% of the patients weaned from mechanical ventilator are in the age group above 32 years for both experimental and control group.

Most of the patients weaned from mechanical ventilator (65%) were males in experimental group and (55%) in control group.

With regard to educational status among experimental group 7(35%) patients weaned from mechanical ventilator have no formal education, 1(5%) patients weaned from mechanical ventilator have primary education, 5(25%) patients weaned from mechanical ventilator studied up to secondary schools education and 7(35%) patients weaned from mechanical ventilator have other educational status.

In control group 6(30%) patients weaned from mechanical ventilator have no formal education, 6(30%) patients weaned from mechanical ventilator have secondary schools education and 8(40%) patients weaned from mechanical ventilator have other educational status.

In regard to type of family, in the experimental group 6(30%) patients weaned from mechanical ventilator belongs to nuclear family, 14(70%) patients weaned from mechanical ventilator are from joint family. In control group 5(25%) patients weaned from mechanical ventilator are from nuclear family, 13(65%) patients weaned from mechanical ventilator are from joint family and 2(10%) patients weaned from mechanical ventilator are from extended family.

With regard to the income of family, In Experimental group 2(10%) patients weaned from mechanical ventilator, income of the family ranges between 5001-10000Rs, 11(55%) patients weaned from mechanical ventilator, income of the family ranges from 10001-15000Rs and 7(35%) patients weaned from mechanical ventilator, income is more than 15000Rs. In control group 1(5%) patients weaned from mechanical ventilator, income of the family ranges between 5001-10000Rs, 12(60%) patients weaned from mechanical ventilator income of the family ranges between 10001-15000Rs, and 7(35%) patients weaned from mechanical ventilator, income of the family is more than 15000Rs.

With regard to duration on mechanical ventilator among experimental group, 15(75%) patients weaned from mechanical ventilator, were in ventilator for 0-5days, 3(15%) patients weaned from mechanical ventilator, were in the ventilator for 5-10 days, 2(10%) patients weaned from

mechanical ventilator, were in the ventilator for 15-20 days. In control group 16(80 %) patients weaned from mechanical ventilator, were in mechanical ventilator for 0-5days, 4(20%) patients weaned from mechanical ventilator, were in mechanical ventilator for 5-10 days.

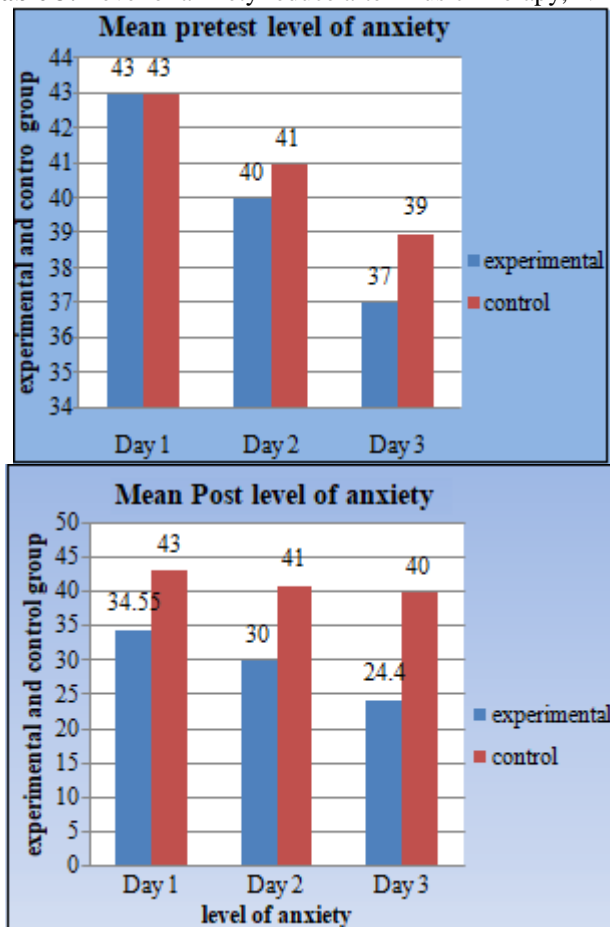
Table 2: Comparison of level of anxiety score among patients who weaned from mechanical ventilator in experimental and control group. (n=20+20)

Days		Experimental Group(n=20)		Control Group(n=20)		Independent t test and P value
		Mean difference	S.D.	Mean Difference	S.D.	
Within Days	Day 1	9.050	2.03	.5000	1.3178	t=21.349 P=.005
	Day 2	9.550	2.43	.4500	1.669	t=21.048 P=0.05
	Day 3	13.400	1.90	.5500	1.1459	t=57.787 P=0.05
Between Days	Day 1 – Day 3	19.200	2.09	3.2500	1.4095	t=16.817 P=0.05

Note: *P<0.05, *** - P<0.001 Level of Significant

Table shows comparison of level of anxiety score among patients weaned from mechanical ventilator in experimental and control group. Within the days on day 1, day 2 & day 3 the obtained t'' value was 21.349, 21.048 & 57.787 respectively which was significant at P<0.05, and mean difference is 9.05, 9.550 and 13.40 respectively. Between the days on day 1 – day 3 the obtained t'' is 16.817 which was significant at P<0.05 with 19.20 mean. This shows that comparing day one and day three the difference in effectiveness of music is highly significant.

Table 3: Level of anxiety reduce after Music Therapy, N=40



Graph shows that In exp group the effectiveness of music therapy on level of anxiety, which indicates the difference in pre and post test level of anxiety scores

Table 3: Find out the Association between demographic variables and post test level of anxiety among patients in experimental group, (n=20)

Demographic Variables	Moderate anxiety (frequency)	Severe anxiety (frequency)	Chi Square value & P value
Age (yrs)			
18-22	0	1	$\chi^2=8.299$ D.f.=3 P=0.005 (Significant)
23-27	1	1	
28-32	1	2	
Above 33	9	5	
Gender			$\chi^2=.642$ D.f.=1 P=0.423 (Not significant)
Male	8	5	
Female	3	4	
Educational status			$\chi^2=2.453$ D.f.=3 P=0.484 (Not significant)
No formal education	4	3	
Primary school	0	1	
Secondary school	2	3	
Any other	5	2	
Type of Family			$\chi^2=.087$ D.f.=1 P=0.769 (Not significant)
Nuclear family	3	3	
Joint family	8	6	
Extended family	00	00	
Income of the family			$\chi^2=2.789$ D.f.=2 P=0.248 (Not significant)
Below 5000	00	02	
5001-10000	00	02	
10001-15000	07	04	
Above 15000	04	03	
Duration on ventilator			$\chi^2=8.41$ D.f.=2 P=0.005 (Significant)
0-5 days	9	6	
5-10 days	1	2	
10-15 days	1	1	

Table shows that :In age in years χ^2 value was 8.299 which is higher than calculated value which is 0.005 This shows that age in years was significant with post test level of anxiety among patient in experimental group.

For duration on ventilator χ^2 value was 8.41 which is higher than calculated value which is 0.005. This shows that

duration on ventilator was significant with post test level of anxiety among patient in experimental group.

The association between demographic variables and post test level of anxiety among patients weaned from mechanical ventilator in experimental group.- age, gender, educational status, type of family income of the family and duration on ventilator shows that there was significant association between age, & duration on ventilator.

In gender, educational status, type of family and income of the family χ^2 value was .642, 2.453, 0.87, 2.789 which is lower than the calculated value so There was no significant found in the gender, educational status, type of family and income of the family

6. Conclusion

According the findings of the study We can conclude that Music therapy was significantly effective in reducing the level of anxiety among the patients weaned from mechanical ventilator. It is also effective, non-pharmacological, accessible and cost-effective.

7. Nursing Implication

The finding of the present study have implication for Nursing Education, Nursing Administration, Nursing Practice, and nursing Research.

Nursing Education: This is a model for nursing educator, nursing lecturer, and clinical instructor to teach the student in the classroom as well as in the bedside regarding mechanical ventilator & anxiety among the patients weaned from mechanical ventilators & technique used to reduce the anxiety level among patients weaned from mechanical ventilator. Nurse educator can use this intervention as a routine class or topic in the colleges.

Nurse Administration: Administrator should facilitate the development & implementation of strategies to reduce the level of anxiety among patients weaned from mechanical ventilator By utilizing the study result, administrator can facilitate an environment for the patients weaned from mechanical ventilator to cope with the stressful & anxious situation. This intervention is a educative & administrative aspect in the Hospital. Nurse administrator can use this knowledge to supervise the nursing staffs in implanting anxiety reduction technique to ease level of anxiety among patients weaned from mechanical ventilator.

Nurse administrator can conduct in-service education program on the Mechanical Ventilator to increase the skills & knowledge level of the staff nurses. This would enable the health personal in updating their knowledge and acquire skills to reduce the level of anxiety among patients weaned from mechanical ventilator. Moreover increased knowledge improves the clinical performance of the nurses and this would provide the reinforcement to the nurses.

Nursing Practice: ICUs Staff Nurses can identify the anxiety level among patients weaned from mechanical ventilator by using the Hamilton anxiety scale. ICUs Nurses can organize certain techniques to reduce the anxiety among

patients weaned from mechanical ventilator. This intervention make the staff nurses more competitive in providing care to the patients who weaned from mechanical ventilator. Many parameter can be used to assess the level of anxiety patients weaned from mechanical ventilator this intervention to be more skillful and good good rehabilitator in her profession. Counseling session can be conducted for the patients weaned from mechanical ventilator to minimize their anxiety level thereby improving their health toward the changes. The data can also helpful in planning and implanting various other interventions for dealing with the ICUs patients.

Nursing Research: This study will be a benchmark in the nursing profession and nursing research. it has took great challenges in conducting the study by using various methods and techniques. There is a need to conduct further research on music therapy on level of anxiety patients who weaned from mechanical ventilator.

Similar study can be replicated in large population, with completely new sample, to generate more valid and reliable data. In the field of research this study can be conducted for the advantages of patients who are admitted in the hospital with mechanical ventilator. There is a need to conduct further research studies in this field, especially in the Indian context.

8. Recommendations

Based on the findings of the study, the following recommendations are offered for future research.

- The study can be replicated on a larger sample to validate the findings and make generalizations.
- The study can be done to assess the effectiveness of music therapy on level of pain among patients weaned from mechanical ventilator.
- The study can be done to assess the effectiveness of music therapy on biophysiological measures among patients weaned from mechanical ventilator.
- A comparative study can be done to assess the effectiveness of music therapy among postoperative and patients who weaned from mechanical ventilator.
- A study can be replicated on A comparative study can be conducted with more than one intervention.

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